



a neurocognitive motor
math program
designed to teach
children ages 6-12
math facts and factors

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2nd Edition



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Dear Parents, Teachers and Colleagues,

Have you ever wondered why some children seem to master their math facts so easily and yet others, perhaps your child, has difficulty remembering the answer to 6×9 ?

They're just math facts, they should be so simple. Yet 3rd-5th grade math causes much anxiety for millions of children and their parents. How can we help? With **PLAY MATH** ~ A neurocognitive approach that engages the cortex through motor movement while moving around the defensive brain reducing anxiety and increasing confidence.

Play Math integrates the newest neuroscience research with occupational therapy, cognitive psychology and physical education. Rarely does a program integrate aspects from such a variety of professions and research.

What follows is a description of the simple methodology for you to explore and make your own. Play Math is not a direct instruction method, it's a method founded in the work of Luria, Das, Carpenter, Vygotsky, Fletcher and more, allowing for freedom and creative play. Alternating fine and gross motor movement, play math enhances conceptual math understanding while teaching number composition through play.

A central feature of Play Math is the confidence-building process of sharing one's knowledge with family members and other children. As the older children learn their math facts and factors, they can become **Math Mentors** for younger children. They can do simple things like make videos or hold Math Nights teaching family members and friends their new-found knowledge. The resulting improvement in self-esteem is part of the joy of **Play Math**.

Our goal is simple ~ to change the trajectory of children's conceptual understanding of fact families (multiplication and division).

You're now a **Play Math Ambassador**, please spread the word that "**Motor movement enhances learning.**" Email me thefamilycoach@gmail.com with any insights or ideas you have to improve the program. I am listening.

Peace and Joy,

Dr. Lynne



The History & Science of Play Math

We Like stuff thats good for kid's Brains 



How Does **PLAY MATH** Work?

When we [engage the cerebellum and the frontal lobes](#) of the brain, through motor movement + cognition, we introduce the children to whole brain math. No longer are we relying only on visual and auditory input, we are utilizing the cortico-cerebellar connection with rhythm and movement to learn math skills (Ito, 2011; Koziol & Budding, 2008).

How Do We **PLAY MATH**?

We teach number relationships with fine and gross motor movement leading to a conceptual understanding of fact families and factors. This generates a natural scaffolding of math skills far beyond symbol relations and memorization, It leads to [meaningful](#) math.

Did you know up to 50% of 7th graders do not have a good understanding of their math facts? Why is that? Working with children grades K-5, I observed that many children are taught math symbolically. They are taught counting and then go straight to number lines and then equations $3 + 3 = 6$; $9 \times 2 = 18$. This manner of teaching is primarily auditory and visual. What the children are missing is a conceptual understanding of the relationships between the numbers.

In our simple motor math program, [Play Math](#), we teach meaningful math using kick balls, along with polypots, marker boards, markers, and Unifix blocks to play math motorically. We see math, say math, play math, write math and build math so that the children begin to develop the ability to [THINK mathematically](#).

Here today, we will teach you the simplest motor movements and math composition strategies. From here, you and your children can make up games, use other sports equipment, draw, play and create. The sky is the limit.



5 Very Simple Steps

We Like stuff thats good for kid's Brains 

The 5 Steps are:

1. Establish A Rhythmic Beat
2. Mirror Count ~ Large Ball Bouncing
3. Skip Count ~ Large Ball Bouncing
4. Slide and Glide ~ Move the Blocks
5. Bounce to The Beat and Repeat

If you have a child who is learning math or struggling with math, adding visual, motor and play components to their math development is a fun and effective way to teach math fact and factor relationships.



Play Math is super simple, bounce the ball, skip count, build the numbers with blocks and look for what numbers make up other numbers.

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rhythmic movement



Let's Practice!

Alright, so what we're going to do here is go through the steps from "establish the rhythmic beat" to "bounce to the beat" with 10's. On the next few pages, you will find the actual words we use with the children as well as the actions we do. We have several videos to help you "see" how to implement Play Math [HERE](#).

When you use your imagination you can see that the same wording will fit for 5's, 2's, 3's, 4's etc. Be yourself, be encouraging, be flexible, feel creative and have fun.



rhythmic movement

Rhythm

R

SAY IT

Let's begin bouncing the ball.
We'll stand a few feet apart.
I'll bounce the ball to you and
you bounce the ball back to
me.

Prompts:
Nice bouncing.
Can you hear the rhythm?
1-2; 1-2

We are bouncing in a steady
beat.
You're great at this.
Good work.
We're getting ready to add
numbers.

Rhythm

R

PLAY IT

Bounce the ball between you
and the child creating a nice
V between you with the ball.
Establishing rhythm helps the
brain develop order.

Show the child that if you hold
the ball with two hands, one
on other side of the ball and
push it into the center of the V
you have more control.

Smile, make this playful and
fun, we want the child to
enjoy the movement.

Rhythmic movement is the very beginning of play math. Some children who have difficulty with aspects of learning need help coordinating their large motor movements with solid timing. When the children learn to rhythmically bounce the ball, they begin to experience mastery and confidence. The rhythm assists in their motor planning, coordination and focus.

skip counting





Skip Counting

Skip Counting

10

SAY IT

We did that so well, shall we try to alternate the numbers? I say 10, you say 20 and so on? I think we can do it.

Here, you have the ball and start, you can be the teacher. You say 10 and I'll say 20. You say 30 and I'll say 40. Let's give it a try.

Prompts:
You are a great teacher.
I think we're getting the hang of it.
Now we're ready to SEE what 10's LOOK LIKE.

Skip Counting

10

PLAY IT

Bounce the ball between you and the child with a nice constant rhythm. As you bounce the ball say 10, then 20, then 30 and so on to 100. The child can also begin.

If the child is having fun and wants to go beyond 100, take the child's lead, empower the child to be the leader.

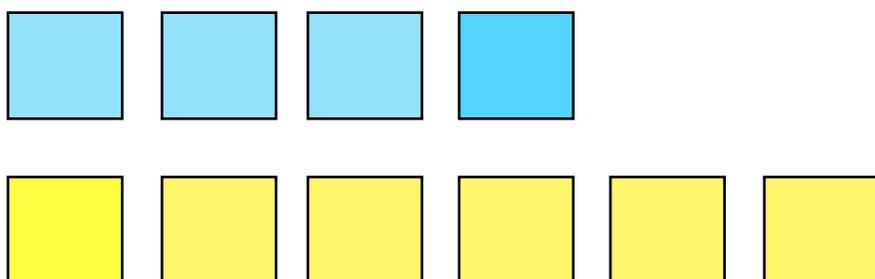
Next, it's time to open the blocks, so go for it, get down on the floor or sit at a table and open the blocks.

In America we count using a decimal system. We count in 10's. That is why we begin with 10's even with 5th graders. Later, this allows us to talk about place value, larger numbers and how fast the children can problem solve when they understand the decimal system.

Mental Math as VISUAL MATH!

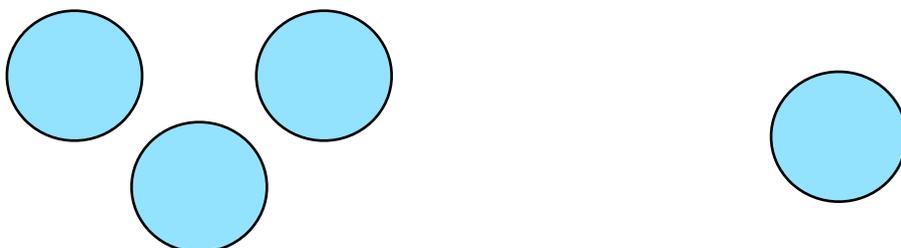


In Play Math, we love mental math for one specific reason, holding numbers in your working memory improves brain function. We do want children to work with numbers in their frontal lobes, but first we want them to have a visual image they can hold and manipulate. This seems simple because we are doing addition but multiplication is addition, it's simply fast addition.



Instead of asking a child to add $4+6$ in his head, we want to ask him to “SEE” $4+6$ in his head and then count it. In Play Math we love blocks, but circles are pretty cool as well.

Here's another great concept. Subitizing “to know instantly.” Using “subitizing” the child begins to group numbers to “see” them in his head. To read more about subitizing visit Ken's Math. www.kensmath.com/kens-math-program/subitizing

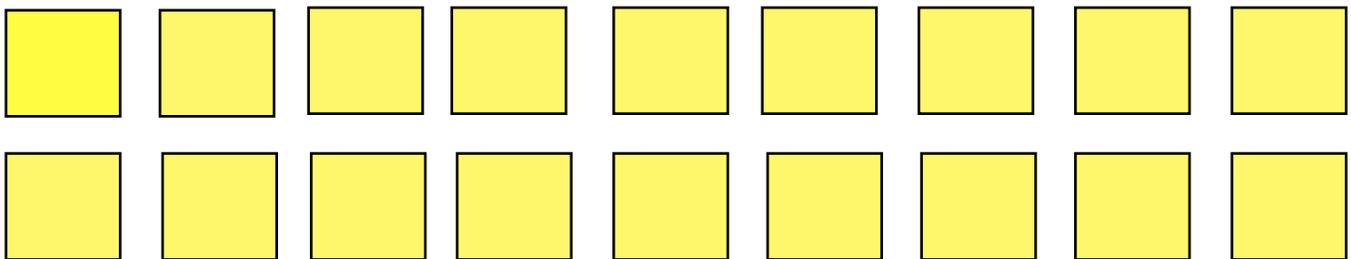




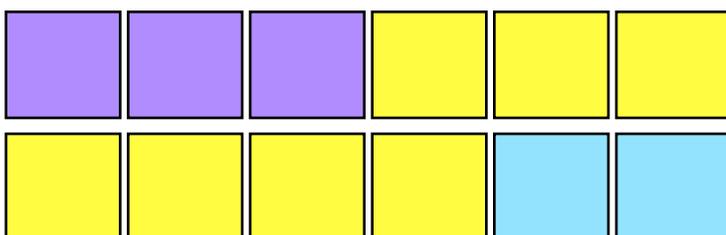
Mental Math as VISUAL MATH!

Let's see one more cool concept before we go to the "Over and the up."

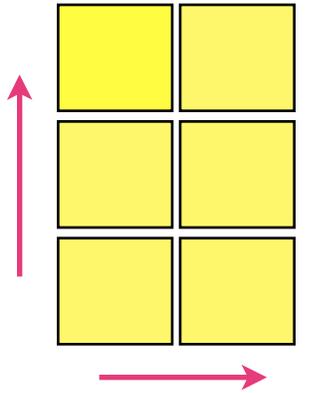
After children are able to "see" the meaning of numbers with blocks, we can begin to show them that multiplication is simply fast counting. When we build "rods" that is, "units" of numbers that are equal or "the same" we can show them that if we have one 10 and we add another ten we have "2 tens" or 20! PLAY with the blocks, make numbers move them around see what numbers make other numbers. [Play Play Play](#).



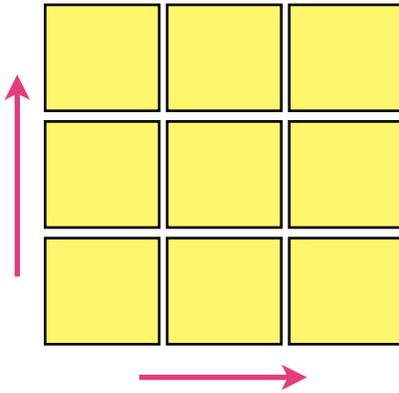
Below we have two 6's. How many "2's" fit into them? How many "3's" fit into them? Lay the blocks on top of one another to see "what fits."



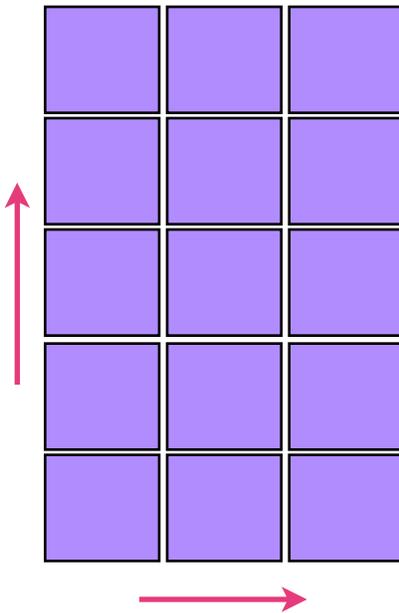
more over and up ~
so you can get the hang of it.



$$2 \times 3 = 6$$



$$3 \times 3 = 9$$



$$3 \times 5 = 15$$



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